

CLAIMS

1. A device for recording information on a relatively-moving media, the device comprising:

a body having a leading end, a trailing end, and a media-facing surface,

a first soft magnetic layer disposed in said body and terminating at a first pole tip disposed adjacent to said media-facing surface,

a second soft magnetic layer disposed in said body and terminating at a second pole tip disposed adjacent to said media-facing surface, said second pole tip having a leading edge disposed adjacent to said first pole tip and a trailing edge disposed distal to said first pole tip,

wherein said first and second soft magnetic layers are magnetically coupled in a part of said body distal to said media-facing surface,

said leading edge is separated from said first pole tip by at least a micron,

said first pole tip has an area substantially larger than that of said second pole tip, and

said trailing edge is substantially larger than said leading edge.

2. The device of claim 1, wherein said second pole tip has a trapezoidal shape.

3. The device of claim 1, wherein said second soft magnetic layer has a cross-sectional shape at a location at least one micron from said second pole tip that is substantially equal to a face of second pole tip.

4. The device of claim 1, further comprising an arm coupled to said body and pivoting to position said body over different parts of the media.

5. The device of claim 1, further comprising a magnetoresistive sensor disposed adjacent to one of said pole tips.

6. The device of claim 1, wherein said second soft magnetic layer is magnetically coupled to said first soft magnetic layer with a third magnetically permeable layer.

7. The device of claim 1, wherein the media has an easy axis of magnetization substantially perpendicular to said media-facing surface.

8. The device of claim 1, wherein the media has a soft magnetic underlayer.

9. A device for recording information on a spinning disk,  
the device comprising:

a slider having a leading end, a trailing end,  
and a disk-facing surface,

a first soft magnetic layer disposed in said  
slider and terminating at a first pole tip disposed  
adjacent to said disk-facing surface,

a second soft magnetic layer disposed in said  
slider and terminating at a second pole tip disposed  
adjacent to said disk-facing surface, said second pole tip  
having a leading edge disposed adjacent to said first pole  
tip and a trailing edge disposed distal to said first pole  
tip,

wherein said first and second soft magnetic  
layers are magnetically coupled in a part of said slider  
distal to said disk-facing surface,

said leading edge is separated from said first  
pole tip by at least a micron,

said first pole tip has an area substantially  
larger than that of said second pole tip, and

said trailing edge is substantially larger than  
said leading edge.

10. The device of claim 9, wherein said second pole tip  
has a trapezoidal shape.

11. The device of claim 9, wherein said second soft  
magnetic layer has a cross-sectional shape at a location at  
least one micron from said second pole tip that is  
substantially equal to a shape of second pole tip.

12. The device of claim 9, further comprising an arm connected to said slider and moveable to position said slider at plural distances from a center about which the disk is spinning.

13. The device of claim 9, further comprising a magnetoresistive sensor disposed adjacent to one of said pole tips.

14. The device of claim 9, wherein said second soft magnetic layer is magnetically coupled to said first magnetically permeable layer with a third magnetically permeable layer.

15. The device of claim 9, wherein the media has an easy axis of magnetization substantially perpendicular to said media-facing surface.

16. The device of claim 9, wherein the media has a soft magnetic underlayer.

17. An information storage system comprising:

a rigid disk spinning about a disk center, said disk having a media layer adjacent to a disk surface,

an arm having a free end adjacent to said disk surface, said arm adapted to move said end toward and away from said disk center,

a body coupled to said free end, said body having a leading end, a trailing end, and a disk-facing surface, said disk-facing surface disposed adjacent to said disk surface,

a first soft magnetic layer disposed in said body and terminating in a first pole tip disposed adjacent to said disk-facing surface,

a second soft magnetic layer disposed in said body and terminating in a second pole tip disposed adjacent to said disk-facing surface, said second pole tip having a leading edge disposed adjacent to said first pole tip and a trailing edge disposed distal to said first pole tip,

wherein said first and second soft magnetic layers are magnetically coupled in a part of said body distal to said media-facing surface,

said leading edge is separated from said first pole tip by at least a micron,

said first pole tip has an area substantially larger than that of said second pole tip, and

said trailing edge is substantially larger than said leading edge.

18. The system of claim 17, wherein said second pole tip is disposed adjacent to a substantially circular disk track that is concentric with said disk center, and said trailing edge is not perpendicular to said disk track at a point of said track that is nearest to said trailing edge.

19. The device of claim 17, wherein said disk has first and second substantially circular and concentric tracks, and said pole tips are aligned with said first track and not aligned with said second track.

20. The device of claim 17, wherein said second pole tip has a trapezoidal shape.

21. The device of claim 17, further comprising a magnetoresistive sensor disposed adjacent to one of said pole tips.

22. The device of claim 17, wherein said media layer has an easy axis of magnetization substantially perpendicular to said media-facing surface.

23. The device of claim 17, wherein said disk has a soft magnetic underlayer disposed adjacent to said media layer.

24. The device of claim 17, wherein said media layer has pattern of magnetization with a trapezoidal shape.